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PULTE (J. H.)

# THE SPECTROSCOPE,

AND THE LAW

“SIMILIA SIMILIBUS CURANTUR.”

READ BEFORE THE

AMERICAN INSTITUTE OF HOMŒOPATHY,

AT ITS

*Nineteenth Session, held at Pittsburg, Pa., June 6 & 7, 1866,*

BY J. H. PULTE, M.D.,

OF CINCINNATI, OHIO.

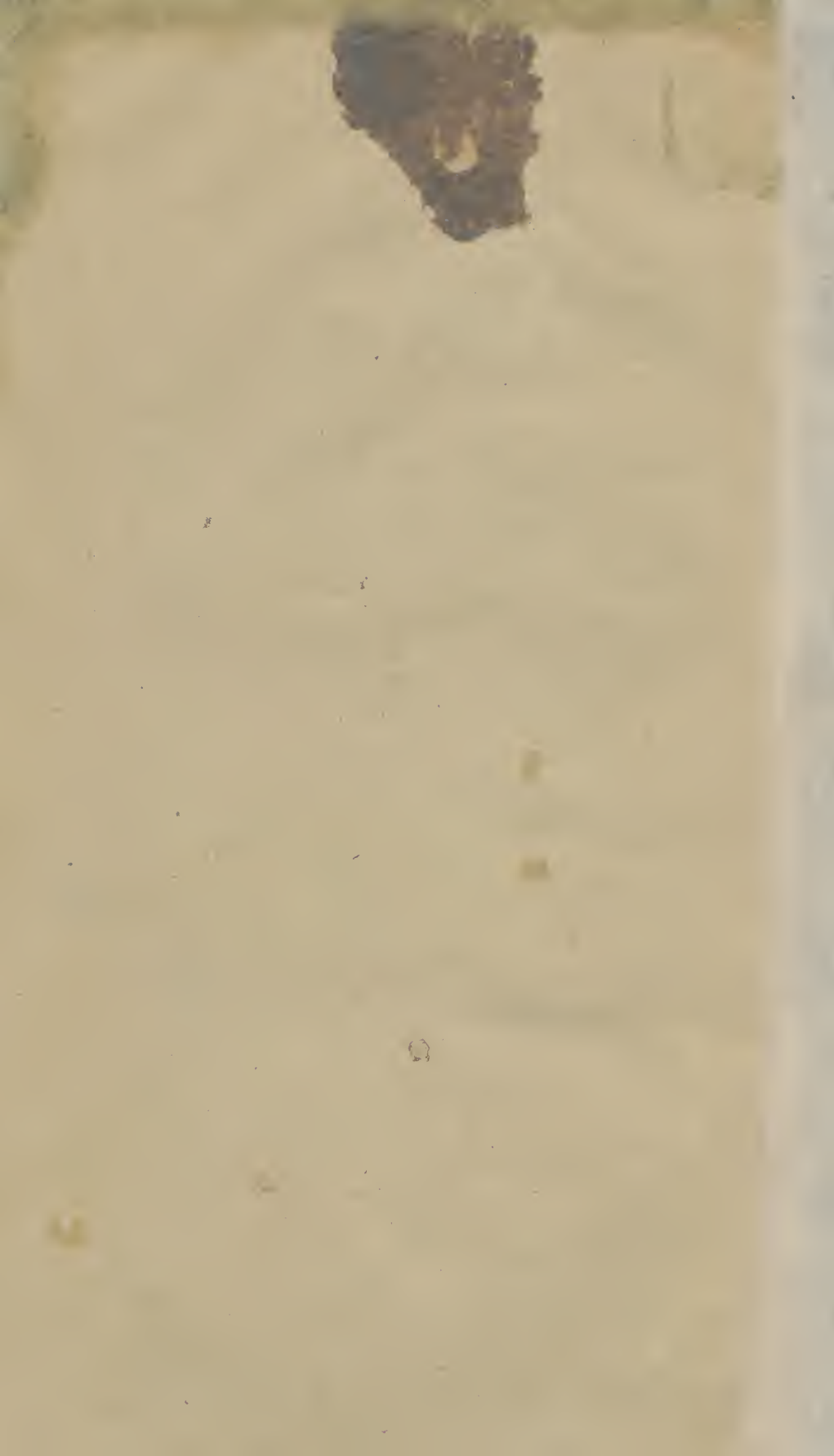
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THE SPECTROSCOPE, AND THE LAW "*SIMILIA  
SIMILIBUS CURANTUR.*"

BY J. H. PULTE, M.D., CINCINNATI, OHIO.

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THROUGH the use of the spectroscope, the field of our knowledge has been wonderfully enlarged. Kirchoff and Bunsen, to whom we owe these splendid achievements of scientific researches, have already found several new metals, whose existence heretofore was not even dreamed of. These two eminent chemists have thus opened a new era of chemical investigation ; and the results already gained have been brilliant, and excite the greatest hopes for future achievements,

This new era does not ignore nor despise bodies apparently small, but rather endeavors to make the infinitesimal appear in massive quantity. The two first new metals, cæsium and rubidium, were eliminated by Bunsen from the mineral waters of Durkheim, in which they existed in infinitesimally small quantities. He had examined the spectra of the alkalis contained in these waters, when his observation was arrested by some bright lines which he had never seen in other alkalis. This was to him a sure

indication of the presence of some new alkaliac metal, which had heretofore eluded, by its minute quantity, the investigations of the chemist. Thus a mere trace of a substance as yet unknown to him led Bunsen to the heroic labor of evaporating forty tons of the waters of Durkheim, to procure enough of this metal for examination. He called it *cæsium*, — *i.e.*, bluish-gray; because it is characterized in its spectrum by two fine violet hues. Rubidium, so called from the Latin *rubidus*, was the next new metal which Bunsen eliminated from the same mineral waters. Its spectrum is characterized by two bright-red rays at its least refrangible extremity. Thallium, another new metal, found by Crookers, has been thus called because its spectrum is characterized by a bright-green band. This latter metal closely resembles lead, but has different chemical properties.

While the spectral analysis has thus revealed to us in the minutest particles a world of new and wonderful existences, and has done for us, as regards the interior relations of things, that which the microscope has revealed to us as to their surfaces, we recognize in the spectroscope a co-worker destined to be eminently instrumental in discovering, not merely infinitesimal existences, but also in elucidating laws whose governing power might be identical throughout all the domains of nature.

And in this respect, I am happy to say, we shall not be disappointed. Already we possess data upon which to base a plausible hypothesis, in such a form that its relationship to our own governing law, *similia similibus*, cannot but be recognized at once.

In order to present the subject more clearly, I have to refer at first to the phenomena which appear during the process of spectral analysis.

The decomposition of a white ray produces an image consisting of certain brilliantly colored rays, which are crossed, however, by *dark* lines: those in the solar spectrum are always found in the same places. In the spectra obtained from artificial sources of light, it is found that some exhibit the colored rays shading one into the other, while others consist of a "series of luminous bands separated by dark spaces; and that these luminous bands are frequently found to coincide with the dark lines of the solar spectrum."

Without following the learned Bunsen in his train of hypothetical reasoning on this subject, I will allude here only to the important fact, which in this case became a new starting-point of further investigations; viz., that "the spectrum of an incandescent gas becomes *reversed* (that is, that the bright lines become changed into dark lines), when a source of light of sufficient intensity, giving a continuous spectrum, is placed behind the luminous gas."

Here was a fact, the explanation of which challenged the most learned physicists. Kirchoff and Bunsen continued, however, to follow up its practical bearing by actual experiment. Their reasoning resulted in the following conclusion: "*That the solar spectrum, with its dark lines, is nothing else than the reverse of the spectrum, which the atmosphere (photosphere) would alone produce.*"

To prove this conclusion correct, the following experiment was made :—

The spectrum from incandescent soda appears in a bright-yellow color ; if, between this soda flame and its spectrum, we impregnate the air with “some soda vapor, by volatilizing soda,” then the “bright-yellow lines become at once a black line. This holds true for all the substances which have yet been examined. The colored *bright* lines are converted into *dark* lines, if the rays from the *colored flames* are made to permeate vapors of the *same* constitution as those which produced the *particular* spectrum under examination.”

Here, then, we have the expression in full of a law *similia similibus*, based upon physical experiments which can be reproduced at pleasure, and which thus far have not failed to prove the law intact in all substances subjected to this experiment.

It is certainly remarkable, to say the least, that savans such as Hahnemann and Bunsen should arrive at the same law governing existences, travelling, as they did, such different roads. If Hahnemann completed his formula by adding the word “*curantur*,” he merely expressed by this the intention of the law in force : for the same reason, Bunsen might add to his formula the word “*annihilantur*,” without destroying in the least the identity of his law with the one of Hahnemann. They are, in fact, the same law operating in potentialities when acting upon each other in different degrees of tension.

Various other very interesting experiments, especially by Kirchoff, were made to test the above law in its many

relations to different substances, but nothing was found to invalidate its existence; but its explanation was based "upon the supposition that the sodium flame absorbs rays of the same degree of refrangibility as those it emits, while it is perfectly transparent for all other rays."

Here we have the result of observations alike remarkable in their origin (taking care of infinitesimals at first) as in their tendencies, coinciding with those already known and practically used in our own beloved science. And this latter, homœopathy, becomes more cherished, and its founder more exalted in our estimation, since his discovery of the law *similia similibus* was so far in advance, as to time, of that of Bunsen and Kirchoff. Still, nothing in the realm of thought comes too late; and, while the discovery of Bunsen gratifies our pride as homœopaths, it should do more than this,—it should stimulate our researches in that direction to greater energy.

In the following, I will venture to lay before you the probable uses we may make from the results obtained by the spectroscope:—

The physicists have their own way of explaining these phenomena. They begin to say, that the rays of the sun, which is in a state of intense incandescence, pass through an atmosphere called photosphere, which is the combination of the gases of all the metals burned up in the sun; and then these rays meet with their analogues of lighted vapors, which render them opaque; and in this condition they reach the earth. If this were not so, the sun's rays would appear on earth in a series of brilliantly colored bands, as the result of the various metals which are in an

incandescent state in the sun. The dark line called D (Fraunhofer's D), which has been found to be the one corresponding to the sodium line, becomes luminous again as soon as the solar spectrum is made to pass through sodium vapor. This shows conclusively, that the dark line D was the product of soda combustion in the sun, and was annihilated by its passage through a vaporous atmosphere, mixed with soda vapor, which must be contained in the photosphere of the sun. The dark line D was made luminous again as soon as the corresponding soda flame was added to the solar spectrum, by making this pass through a colored soda flame. Another experiment will sustain the truth of this law very forcibly. "A glass tube, containing a small quantity of metallic sodium, was rendered vacuous, and then closed. On heating the tube, the sodium rose in vapor, filling a portion of the empty space. Viewed by ordinary white light, this sodium vapor appeared perfectly colorless; but, when seen by the yellow light of a soda flame, the vapor cast a deep shadow on a white screen, showing that it did not allow the yellow rays to pass through."

Now, we can make a useful application of this state of facts for the explanation of the *modus operandi* of our own law, *similia similibus curantur*. The physicist has to do with potential matter in certain conditions and in certain states of contact; so have we: whether this be the result of organization or inorganic action does not alter the case.

The white light of the sun, not decomposed by the prism, is the combined result of the combustion of all

metals and matter contained in the nucleus of the sun and homogeneous in its space: it has only three functions, *light*, *heat*, and *actinism* (ray-power expressive of the chemical principle of the sunbeam). This constitutes the normal or healthful condition of light. The neutral, or normal tint of the sunbeam is white; only when decomposed by the prism, it appears in the well-known rainbow spectrum. In this condition it can be analyzed; and it is then found that the above three functions of light, heat, and actinism, reside in different rays, and are made inoperative by the interference of other rays.

Health exhibits a similar condition of the body: it is the state in which all the functions of the system are in a combined normal action, having only three distinct characteristics, — nerve power (light), vascular power (heat), and assimilation (actinism).

If this equilibrium of functions is disturbed by agencies from without, or changes from within, then comes disease, or the predominance or depression of one function as related to another.

The symptoms of disease are just as truly emanations of the central life-force as are those of health; but they are either in excess of, or in want of, expression. In the former case they are silenced or cured by passing through an atmosphere charged with a similar potentiality, and in the latter case by having the want of it replaced by a similarly acting potentiality. In both cases the law, *similia similibus*, is applicable, and analogous to the law governing the phenomena of light. In this connection, I will call attention to the support which this view of the action

of medicine gives to the alternation of remedies. It is perfectly justifiable, because they are alternations of so many similarly constituted factors, applicable for the same object. I would also mention here, that a classification of remedies as to the three great functions of the organism might be possible: if so, it might be found that they would perhaps correspond to those the functions of which are already known in regard to light. The green color made by the oxide of copper interferes with the rays of heat, while it is perfectly transparent to light; the yellow color of the chloridè of silver interferes with the actinic ray, while it also allows light to pass through; on the contrary, the deep-blue color of the oxide of cobalt does not obstruct the chemical ray, but resists the passage of the light itself.

Thus our materia medica might receive some help from these data, as to the effect of substances in the different functions of the system.

Spectral analysis is yet in its infancy: we may hope to find by its aid, hereafter, a still closer affinity of the inorganic with the organic, and an identity of the laws governing both. Then will come the time when the doctrine of potencies will find, perhaps, a quicker solution in the laws which govern the phenomena of light.







